

NGSS GRADE 6 SCIENCE COURSE OVERVIEW

The NGSS Grade 6 Science course has been developed to support Maryland’s adoption of the Next Generation Science Standards (NGSS) and to address the state’s environmental literacy graduation requirement (COMAR 13A.04.17). The course was developed using a three dimensional approach as outlined in the NGSS. The units address Life Science, Earth and Space Science, and Physical Science (Disciplinary Core Ideas) with corresponding Science and Engineering Practices and Cross Cutting Concepts.

There are five units written with a problem-based approach. Essential questions of study for each unit are derived from the *A Framework for K-12 Science Education (2012)*. The subsequent driving questions allow students to investigate the science concepts within real-world applications. All units contain culminating events or projects that compel students to construct explanations to scientific phenomenon or design solutions to engineering challenges related to the performance expectations. Learning cycles guide the teacher to the appropriate scope and pacing for student acquisition of the key topics within each unit as well as provide the resources to design daily lesson planning.

The following chart provides a description and tentative pacing guide (based upon a 50-minute class period) for the units:

Unit Title	Unit Summary
<p style="text-align: center;">Ecosystem Interactions (six weeks)</p>	<p>In this unit, students will develop an answer to the question, “How can we support the native wildlife species in our area?” Students will develop a model of an ecosystem. Throughout the unit, students will observe and measure data from their models as they gain a greater understanding of interdependent relationships, the interactions of biotic and abiotic factors, how matter and energy are transferred within the system, and the effects that these factors have on populations. In the culminating event, students will propose and carry actions to support a native species on their school yard.</p>
<p style="text-align: center;">Matter and Its Interactions (six weeks)</p>	<p>This is a six-week unit focusing on the structure and properties of matter. For the summative assessment, students will engage in a culminating event that demonstrates their understanding of matter and its properties and how matter can be changed to meet society's needs. Students will create a synthetic material from existing resources. Students will then generate an advertisement that communicates how the new material was formed and why this new material benefits society.</p>
<p style="text-align: center;">Motion and Forces (six weeks)</p>	<p>This is a six-week unit focusing on Newton’s Laws of Motion. In the culminating event, students will demonstrate their understanding of the principles of motion by designing a safety helmet. Students will use the engineering design process to construct a helmet (to accommodate a large plastic egg) that models the impact of sport-specific collision. In addition, students will use the test apparatus to model those collisions and collect data to support an argument about the best design.</p>

<p>Space Systems (six weeks)</p>	<p>This is a six week unit focusing on the size and organization of the contents of the universe. Students will investigate and model size and scale of the universe and the objects within. There is a focus on gravity as the force that holds together and controls the motion of objects in the universe. Students will also investigate Earth's place in the solar system. Finally, students will discover that the Earth-moon sun system have predictable patterns which explain phenomena observed on Earth. Throughout the unit, students will also discover the technologies that scientists use to help them study and better understand the components and organization of the universe. In the culminating event, students will take on the role of astronomers to make a claim regarding the possibility of a planet identical to Earth elsewhere in the universe.</p>
<p>Earth Systems (six- weeks)</p>	<p>All Earth processes are the result of energy flowing and matter cycling within and among Earth's systems. Earth changes addressed within this unit include the rock cycle, plate tectonics, geologic events, and continental drift. Throughout the unit, students will investigate these concepts in order to support or refute whether or not a super volcano or earthquake could occur in Maryland.</p>